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Perceptions of Risk Factors that Influence COVID-19 Protective Behavior Determinants

COVID-19 Koruyucu Davranış Belirleyicilerini Etkileyen Risk Faktörlerinin Algısı

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ABSTRACT

Protective behaviors from COVID-19 such as using medical masks, attention to physical distance, and systematic personal cleaning are recommended by the World Health Organization. However, the pandemic infects more people, especially in Turkey, because the public does not adequately fulfill the protective behaviors. This study aims to create a conceptual framework for social marketing interventions within the scope of the health belief model by identifying the impact of participants' risk perceptions on their pandemic prevention behaviors. Data were collected from 459 citizens of the Republic of Turkey through an online survey between May 5 and 12, 2020. The structural equation model was performed with AMOS-20 to assess the proposed model. The data obtained through the surveys indicate some apparent thoughts of participants: COVID-19 can easily spread between people and therefore, has the potential to collapse the health system; the most effective way to protect from the pandemic is to stay at home; statements from the Ministry of Health and the Scientific Committee are closely followed; this disease will cause significant damage to the Turkish economy; and the pandemic will continue until a vaccine is available. Besides, perceived severity, perceived barriers, perceived benefits, and cues to action have a highly significant impact on the target market's actions toward avoiding COVID-19.

JEL Codes: JEL I12, JEL M38

Keywords: Social Marketing, Health Belief Model, Covid-19, Confirmatory Factor Analysis, Pathway Analysis

ÖZ

Dünya Sağlık Örgütü tarafından Covid-19'dan korunmak için tıbbi maske kullanma, fiziksel mesafeye dikkat etme ve sistematik kişisel temizlik gibi koruyucu davranışları önerilmektedir. Ancak salgın, toplumun koruyucu davranışları yeterince yerine getirmemesi nedeniyle özellikle Türkiye'de daha fazla kişiye bulaştığı görülmektedir. Bu çalışma Sağlık İnanç Modeli kapsamında katılımcıların risk algılarının pandemiden korunma davranışları üzerindeki etkisini belirleyerek Sosyal Pazarlama müdahaleleri için kavramsal bir çerçeve oluşturmayı amaçlamaktadır. Veriler, Türkiye Cumhuriyeti'nin 459 vatandaşından çevrimiçi anket yoluyla 5-12 Mayıs 2020 tarihinde toplanmıştır. Önerilen modeli değerlendirmek için AMOS-20 ile Yapısal Eşitlik Modeli uygulanmıştır. Anketlerden elde edilen veriler, katılımcıların bazı belirgin düşüncelerini ortaya koymaktadır. Bunlar; COVID-19 insanlar arasında kolayca yayılabilir ve bu nedenle sağlık sistemini çökertme potansiyeline sahiptir; Pandemiden korunmanın en etkili yolu evde kalmaktır; Sağlık Bakanlığı ve Bilim Kurulu'nun açıklamaları yakından takip edilmektedir; Bu hastalık Türkiye ekonomisine ciddi zararlar verecektir ve aşı bulunana kadar salgın devam edecektir. Ayrıca algılanan ciddiyet, algılanan engeller, algılanan faydalar ve eylem ipuçları hedef pazarın COVID-19'dan korunmaya yönelik eylemleri üzerinde yüksek ve anlamlı bir etkiye sahip olduğu tespit edilmiştir.

JEL Kodları: JEL I12, JEL M38

Anahtar Kelimeler: Sosyal Pazarlama, Sağlık İnanç Modeli, Covid-19, Doğrulayıcı Faktör Analizi, Yol Analizi

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Introduction

Infectious diseases pass from one individual to another in a variety of ways. The disease-causing organisms can be viruses, bacteria, fungi, or rickettsia and can be transmitted through the air (through droplets formed as a result of speech, sneezing, and coughing), through direct skin contact, and through materials, such as clothing, bedding, and bathroom items (Bauerfeind et al., 2020). Collectively, infectious diseases have been responsible for many human deaths throughout history. The earliest epidemic detected was an influenza outbreak that is believed to have occurred in Babylon or the Babirus of Persians in 1103 BC; it is not known how many people died from the disease (Mouritz, 1921). As another example, it is estimated that between 1346 and 1353, between 10% and 60% of the European population (estimated at 75–200 million people) died from the bubonic plague (Austin Alchon, 2003). The most recent infectious disease to put lives at risk is the COVID-19 pandemic.

Respiratory tract symptoms (high fever, severe cough, shortness of breath) were first detected in a group of patients in Wuhan Province, China, at the end of December 2019. In January 2020, after detailed research was conducted, this disease was identified as COVID-19 (COVID-19 Information Page, 2020). COVID-19 is believed to have a baseline reproduction rate (R0), defined as the average number of people infected by one person in a susceptible population, between 2 and 4. The disease is believed to be transmitted when an uninfected person either inhales droplets produced from the nose or mouth of a person who is COVID-19 positive after the infected person speaks, coughs, or sneezes or when the uninfected person touches an object or site that has come into contact with these droplets and then touches their own face, especially the mouth and nose (Sarda et al., 2020). To slow down the rate at which the pandemic is spreading, experts note that all individuals should make the following behaviors as regular habits: wash their hands longer and more intensely or use disinfectant or Turkish cologne; have less contact with their faces, especially [the] mouth and nose; place more physical distance between themselves and others; stay at home as much as possible; and wear masks when it is necessary to leave the house (Carico et al., 2020). The target group's rapid acceptance, implementation, and continuation of these behaviors as recommended by health authorities are important in slowing the spread of the disease.

In addition to creating global health disasters, infectious diseases also cause socioeconomic losses and deterioration, and the poor, the unemployed, the elderly, and the disabled are especially affected (Sarda et al., 2020). As such, limiting studies on the COVID-19 outbreak to the field of health does not provide a complete picture of the situation. Examining society's views on the disease, determining the basic factors underlying their respective behaviors, and taking social measures to prevent the spread of the disease will facilitate significant gains toward ending the pandemic.

Authorities have taken some strict measures thus far to address the pandemic, including the following: closing national borders and requiring international travelers to leave the country, controlling or limiting intercity travel, declaring curfews, investing in medical initiatives, offering incentives, supporting vaccine research, making the use of masks and disinfectants mandatory in public areas, and disseminating information on how to prevent the spread of the disease (10 Things the EU Is Doing to Fight COVID-19, 2020).

To end a pandemic, it is vital that the public cooperates with such endeavors. Indeed, the WHO emphasized taking protective and preventive measures at the individual level throughout society in order to prevent the spread of the epidemic (Balkhi et al., 2020).

However, history shows that individual efforts are not always sufficient. For example, the experiences and lessons learned from the 1918–1920 Spanish flu pandemic were published nearly 100 years ago in *Science Magazine*, and in the article, obstacles to protection from influenza were categorized under the following three basic factors: first, the public did not comprehend how urgent the situation was; second, people tend to be social rather than isolate themselves away from each other; and finally, people also tend to go overboard with some behaviors, regardless of the risk involved (Bavel et al., 2020).

In this context, in their public health studies published in an academic journal in 1988, Lefebvre and Flora stated that marketing has great potential in terms of reaching a large number of people at very low costs and with more effective methods, and social marketing strategies can be used frequently in the effective management of interventions related to public health.

Social Marketing

Social marketing is the systematic use of marketing to achieve certain behavioral goals; it also involves other concepts and techniques designed to obtain a social benefit (Cheng et al., 2011). In other words, social marketing supports desired behavior change, regulatory actions or practices, and applied methods, among other initiatives (National Consumer Council, 2006). Social marketing, which is part of a strategic toolkit that brings interventions together, has been successfully implemented in many social transformation projects (European Social Marketing Association [ESMA], 2020). Social marketing, as it relates to health issues, supports the target market, enabling them to make informed decisions about their health and to have more control over the factors that affect their health (Crawshaw, 2012).

The effectiveness and efficiency of certain behavioral strategies in preventing the spread of the COVID-19 pandemic can be increased by social marketing interventions. In this context, it is important to be people-oriented, to set social goals, to identify motivations that are effective in promoting desired behaviors, to analyze the current situation and obstacles, and to adopt a set of practices based on ethical principles (ESMA, 2020).

For measures taken against crises to be successful, it is essential that the public perceives them as consistent, competent, fair, objective, and sincere. It is also necessary that the interventions are communicated by reliable people through easy-to-access channels in a way that can be clearly understood by the general public (World Health Organization, 2020). As such, in the context of the COVID-19 pandemic, communication has a vital role in ensuring the target market is informed about the health risks posed by COVID-19 and about the measures that can be taken to reduce its spread. It is also essential that the information provided is correct so that informed decisions can be made, and rumors and/or false information are eliminated. Moreover, accurate and up-to-date information on COVID-19 must be provided in a language that citizens can understand, at appropriate times and through appropriate means, so citizens can act positively

to protect themselves and their loved ones from the pandemic (Barbosa, 2020).

In recent years, social marketing has become an essential component and gained a vital role in the health field's efforts to solve public health problems. For example, social marketing strategies have been successfully used in campaigns targeting the public's protection from acquired immunodeficiency syndrome (AIDS), the prevention of youth smoking, the prevention of child abuse, the fight against various chronic diseases, and general benefits from public health services (Cheng et al., 2011).

Traditional marketing is shaped around the four primary marketing toolkits or marketing principles referred to as the 4Ps: product, price, place, and promotion. Social marketers, too, use these principles to create, communicate, and present value for targeted behaviors (Cheng et al., 2011). The 4Ps—proposing to fulfill the desired healthy or protective action of the target market (product), identifying the obstacles encountered in the suggested behaviors and beliefs (price), providing easy access to activities compatible with the recommended actions (distribution), and promoting healthy behaviors and designing messages consistent with the target market (promotion)—constitute a strategic path in terms of social marketing (Evers et al., 2011). Conducting studies in line with individual public institutions and organizations, the compliance of interventions with policies and legislation, and the need for massive financial resources are all essential for social marketing, mainly because the issues concern a large segment of society (Menegaki, 2012). This unique nature of social marketing reveals the necessity of the four extended social marketing principles. In this context, public, partnership, policy, and purse strings form the expanded mix of social marketing elements (Eser & Özdoğan, 2006).

Various behavioral change theories have been adopted to guide social marketing programs (Lefebvre, 2011). Researchers and health authorities have generally used the planned behavior theory, the transtheoretical model, and the health belief model (HBM) in their studies and projects to encourage healthy behaviors (Orji et al., 2012).

Health Belief Model

The HBM is a structural model introduced and developed by Godfery Hochbaum, Stephan Kegels, and Irwin Rosenstock for the expression and prediction of health and protective behaviors (Shahab et al., 2013). This model serves as a useful guide for the estimation of changes in health behaviors by evaluating the responses of the target market (Chin & Mansori, 2019) and explaining and measuring the factors that affect or prevent the target group's compliance with a desired health-related behavior (Gözüm & Çapık, 2014). Factors such as the behavior's susceptibility, severity, benefits, barriers to implementation, and cues to action perceived by the target market are useful in facilitating their behaviors, such as those related to preventing, screening, or controlling disease conditions.

The most fundamental characteristic of the HBM is that members of the target group for the prevention of the disease believe that they are individually sensitive, that they can contract the disease during a certain period of their lives, and that taking specific steps can decrease both their anxiety about the condition and the severity of the disease (Rosenstock, 1974). These variables are used alone or in combination with each other to explain health behaviors (Orji et al., 2012).

This model is used to examine behaviors that are effective in preventing or alleviating disease. It is also used to identify the target market members' beliefs about actions related to any illness as a whole, regarding the importance and seriousness of the health threat, the perception of benefits realized by healthy or protective behavior, and the obstacles that they encounter or perceive in demonstrating the recommended behavior or adapting to the behavior (Carico et al., 2020).

In the HBM, the subjective risk of contracting a disease is defined as "perceived susceptibility" (Rosenstock, 1974); this refers to whether individuals who perceive themselves as being at high risk are prone to avoid risky behaviors. Gilfoyle et al. conducted a study to understand how certain factors are associated with mammography screening behavior. As a result, they found that perceived susceptibility was positively associated with mammography screening behavior after controlling for relevant covariates (Gilfoyle et al., 2019). In the case of the COVID-19 pandemic, if the target market perceives the risk of catching COVID-19 as high, some changes in their behavior can be expected. Considering this information, the following hypothesis has been established.

H_1: Perceived susceptibility affects the target market's actions toward avoiding COVID-19.

Perceptions and judgments regarding the seriousness of a particular health problem, expressed as "perceived severity," may also differ from person to person (Gözüm & Çapık, 2014). In other words, the target population's perception of the high severity of the consequences of this disease may prompt behavioral changes or new behaviors. In the research conducted on the coronavirus Middle East respiratory syndrome (MERS-CoV) outbreak in 2012 in the United Arab Emirates, it was determined that the severity of catching the virus was positively related to hand washing and a healthy and balanced diet. In other words, the more people perceive they are at risk of being infected by MERS-CoV, the more likely they are willing to wash their hands frequently and eat healthier (Alsulaiman & Rentner, 2018). The following hypothesis has been established pertaining to this aspect of the HBM.

H_2: Perceived severity affects the target market's actions toward avoiding COVID-19.

The perceived costs and benefits for the target market related to the recommended behavior are essential considerations in health-related decisions (Bavel et al., 2020). "Perceived barriers" are the obstacles the target market faces or perceives in exhibiting a recommended behavior or adapting to the behavior. If the target market perceives the desired behavior as unpleasant, inappropriate, painful, expensive, or distressing, they may stop exhibiting the behavior in question. A study conducted in Venezuela, Ecuador, Mexico, El Salvador, and Peru reveals that women failed to attend cervical cancer screening due to difficulties in obtaining accessibility and availability of quality services, facilities that lack comfort and privacy, high costs, and courtesy of providers who interact with poor service delivery (Agurto et al., 2004). However, they may also perceive that some benefits may be obtained by exhibiting the recommended behavior, which in the model is referred to as "perceived benefits" (Gözüm & Çapık, 2014). Higher perceived benefits can increase the likelihood of the target market to perform the behavior. In this context, in the article investigating breast cancer protective behaviors by Tweneboah–Koduah, a positive and statistically significant relationship was found between perceived benefits and protective

behavior (Tweneboah-Koduah, 2018). Based on these components of the HBM, the following hypotheses were established.

H_3: Perceived benefits affect the target market's actions toward avoiding COVID-19.

H_4: Perceived barriers affect the target market's actions toward avoiding COVID-19.

"Cues to action" refers to a variety of factors that are effective in encouraging the target market to exhibit a desired new behavior or in reminding them to practice this behavior. Examples of such factors are the immediate environment, the media, opinion leaders, a newspaper or magazine article, or informational posters. Although cues to action are fundamental variables of the HBM, they are the least measured or researched and least developed variable of the model (Orji et al., 2012). The hypothesis about cues to action established for this study was as follows.

H_5: Perceived cues to action affect the target market's actions toward avoiding COVID-19.

Methods

Data Collecting

The pandemic was specifically considered when planning the survey study. Conducting the survey face-to-face using paper copies of the questionnaire would have risked spreading the disease and would have posed a danger to the pollster and the participants. Therefore, the survey was designed and conducted online using Google Forms. The survey link was sent to participants through social media and phone groups on May 5–12, 2020. The survey, which reached 459 participants in 1 week, consisted of 36 expressions: 26 of the questions required responses using a 10-point Likert scale (2 of which were attention control questions), 6 were multiple-choice, and 4 were demographic questions. The HBM investigates many health problems, from cancer to obesity and from smoking to AIDS. In this study, the scale expressions for the HBM, which was developed by Irwin M. Rosenstock, Godfrey M. Hochbaum, S. Stephen Kegeles, and Howard Leventhal, were adapted from the studies of Carico et al., 2020, Kim et al., 2012, Orji et al., 2012, and Saghafi-Asl et al., 2020. Nine questionnaires were eliminated due to the attention-control question responses; statistical analysis was performed on the data gleaned from the remaining 450 questionnaires.

Ethical Considerations

An application was made to the Ethics Committee of Atatürk University to ensure that ethical elements were addressed in this study, which involved a survey of the sample population to elicit their thoughts about the COVID-19 pandemic. The application was approved by the Atatürk University Ethics Committee, confirming the absence of unethical methods and/or components in this research. In addition, prior to initiating the survey, the participants who agreed to voluntarily participate in the research were informed that personal information other than basic demographic data would not be requested from them and that their responses would be used as data for interpretation in scientific research. The participants' survey response data were saved directly to the Google Drive system to protect the data and to ensure that it could not be subsequently manipulated by other parties.

Research Model

This research study was designed to identify the factors that affect the participants' behaviors related to actions proposed to protect themselves from COVID-19 according to the basic variables of the HBM in order to create a suitable conceptual framework for social marketing interventions. In other words, the effects of the perceived susceptibility, perceived severity, perceived barriers, perceived benefits, and cues to action factors on the action were determined using the HBM. The research model is presented in Figure 1.

According to the research model, the barriers, benefits, susceptibility, severity, and cues to action perceived by the study population affect COVID-19 protection behaviors.

Results

A descriptive analysis was performed using Statistical Package for Social Sciences 20 to determine the demographic characteristics of the 450 members of the sample population. The results indicated 51.8% of the participants were male and 48.2% were female; 28% were 18–35 years old, 45.1% were 36–53 years old, and 26.9% were 54 and older. An analysis of participants' education levels indicated the highest level of education reached by 18.2% was an associate's degree or below, 48.2% had earned an undergraduate degree, and 33.6% had obtained a graduate degree; 68.7% of the participants were employees, 12.9% were retired, 15.7% were unemployed, and 2.7% were students. According to these results, the gender and age distribution was close to ideal, and the education level deviated toward higher education.

Participants were asked six multiple-choice questions related to COVID-19. In response to the question regarding respondents' perception as to why COVID-19 is being taken so seriously around the world, 60.2% selected "The disease has the potential to collapse the health system, as it can be transmitted very easily," while 3.6% indicated they did not believe that "COVID-19 will cause as big of a problem as claimed." When asked about the most effective method for protecting against COVID-19, 59.1% of the participants chose the option of staying at home and not going out as much as possible.

Since COVID-19 is a new disease, the researchers expected that the respondents would not be highly familiar with effective prevention methods. Along these lines, survey respondents were asked to identify who or what influences their views on the most effective measures for protecting against COVID-19:

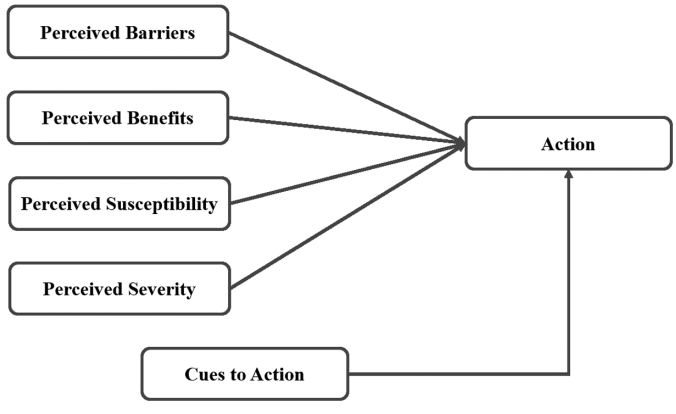


Figure 1.
Health Belief Model (HBM).

80.9% ticked the option "Statements made by health authorities, such as the Ministry of Health and the Science Committee established under the Ministry of Health." When asked about the "communication platforms" through which they obtain useful information on COVID-19, 64.9% selected television, and 23.6% selected social media. As to their belief in the greatest harm that COVID-19 can cause in Turkey, 63.3% of respondents pointed to the economic impact. Finally, 41.1% of participants indicated that the COVID-19 pandemic would continue until a vaccine becomes available when asked when they believed the health crisis would end.

The structural equation model was used to determine the relationships between the variables in the HBM. AMOS 20 was used to examine the goodness of fit between variables in the HBM and to determine the relationship between variables through a path analysis.

Reliability analysis was performed to determine whether the latent variables in the scale were consistent within themselves. Cronbach's alpha values, number of items, and variable codes are presented in Table 1. The following ranges pertain to the values, including the α value obtained as a result of the reliability analysis: values greater than .90 are very highly reliable; values from .80 to .90 are highly reliable; values between .70 and .79 are reliable; values between .60 and .69 are marginally/minimally reliable; and the reliability of values under .60 are considered unacceptably low (Cohen et al., 2007).

The cues to action and perceived severity variable items each had a high level of reliability; the action, perceived susceptibility, perceived benefits, and perceived barriers variables were found to have a good level of reliability among themselves.

A confirmatory factor analysis (CFA) was conducted to verify and test the suitability of the scale used in this study. Composite reliability (CR) and average variance extracted (AVE) values were also checked to assess the internal consistency of the items in the scale and the validity of the structural model. The CR and AVE values of the latent variables are presented in Table 2. As shown in Table 2, the CR values of the latent variables are above the threshold value of .70. When the AVE values of the hidden variables were controlled for, the values for all variables except the cues to action were above the threshold of .50. These values show that the structural model that is consistent within the items is mostly valid. The modification indices were also checked: the results indicated that, theoretically, no more covariance could be drawn between the error terms. The final version of the CFA is presented in Figure 2.

Table 1.
Cronbach's Alpha Values

Variable	Cronbach's Alpha	No. of Items	Code
Action	.798	6	Act 1-2-3-4-5-6
Cues to action	.810	4	Cue 1-2-3-5
Perceived susceptibility	.759	2	Sus 2-3
Perceived severity	.884	5	Sev 1-2-3-4-5
Perceived benefits	.757	2	Ben 1-2
Perceived barriers	.729	2	Bar 2-3

Table 2.
Composite Reliability and Average Variance Extracted

	Composite Reliability	Average Variance Extracted
Cues to action	.791	.487
Perceived severity	.886	.610
Action	.759	.513
Perceived barriers	.742	.592
Perceived benefits	.761	.615
Perceived susceptibility	.773	.634

According to the results of CFA, the perceived susceptibility latent variable with Sus2 and Sus3; the perceived severity latent variable with Sev1, Sev2, Sev3, Sev4, and Sev5; the perceived barrier latent variable with Bar2 and Bar3; the perceived benefit latent variable with Ben1 and Ben2; cues to action latent variable with Cues2Action1, Cues2Action2, Cues2Action3, and Cues2Action5; and finally action latent variable with Act3, Act5, and Act 6 observed variables measured were statistically significant.

Many goodness-of-fit statistics can be used to evaluate the CFA and path analysis. CMIN/*df*, SRMR, GFI, AGFI, CFI, and RMSEA goodness-of-fit statistics are frequently used to interpret analyses (Parry, 2020). The value ranges of the goodness-of-fit index taken as reference in the research are presented in Table 3.

The model CFA fit indices mainly included excellent fit limits. The goodness-of-fit indices of the model are presented in Table 4.

Following the CFA, a path analysis was conducted to test the established hypotheses, that is, to determine whether the variables in the model could explain the action variable in a statistically significant way. As a result of the analysis, it was determined that these variables could statistically predict actions intended to avoid COVID-19 at a rate of 97%. The path analysis diagram is presented in Figure 3.

The endogenous prediction scores and significance levels of the exogenous variables obtained as a result of the analysis are presented in Table 5.

With the exception of the RMSEA, all fit indices obtained as a result of the analysis, which is presented in Table 6, were within perfect fit limits.

The results obtained after the analysis revealed that the perceived susceptibility, perceived severity, and perceived benefit variables were supportive in predicting actions toward avoiding COVID-19, while the perceived barriers and cues to action variables had inhibitory effects. Thus, H_1, H_2, H_3, H_4, and H_5 were accepted. Among the variables, perceived susceptibility had a more intense effect in predicting actions toward avoiding COVID-19 compared to the other variables.

In summary, the results show that if the participants have a high level of sensitivity, perception of severity and utility, and a low level of perception of barriers, it will be as likely that their actions to avoid COVID-19 will occur. The findings are consistent with previous studies. Kim et al. (2012) found that high-level sensitivity, severity, utility, and low-level obstacle perception can lead to behavioral intention. In the study by Saghafi-Asl et al. (2020), it was determined that a high level of sensitivity and perception of benefit were influential in the realization of the behavior. The most

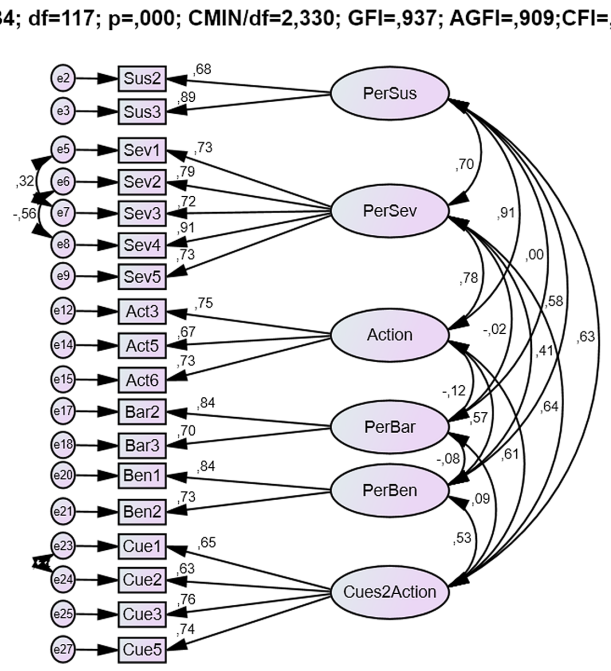


Figure 2.
Confirmatory Factor Analysis.

fundamental difference that distinguishes our study from previous studies is that cues to action negatively affect the behavior of avoiding Covid-19.

Discussion

In addition to the scientific work done in the laboratory environment, succeeding in the fight against COVID-19 also depends on individuals around the world taking precautions in their social life activities and acquiring some new behavioral habits, where necessary. This topic is precisely within the scope of social marketing. In this study, the HBM, used frequently in social marketing research, was applied to identify factors that are effective in promoting behaviors toward protection against COVID-19 in the target market, which comprises citizens of the Republic of Turkey. For this purpose, an e-survey was conducted with a sample population of the target market. The data obtained through the surveys indicate the following among the participants: (1) COVID-19 can be easily passed between people and therefore, has the potential to collapse the health system; (2) the most effective way to protect from the pandemic is to stay at home; (3) statements from the Ministry of Health and the Scientific Committee are closely followed; (4) this disease will cause great damage to the Turkish economy; and (5) the pandemic will continue until a vaccine is available.

The path analysis results indicated that to protect themselves from COVID-19, the participants avoided activities that increased the risk of disease, they used masks and gloves when they left the house, and they stayed away from crowded environments. The results further suggested that perceived susceptibility (i.e., the perception that people of all age groups can get this disease and that being in crowded environments increases the risk of getting sick) had a high supportive effect in predicting these behaviors. Moreover, such perceptions as those pertaining to the anxiety of getting the disease, the rapid spread of the virus among people, the potential to cause permanent organ damage, and taking the disease very seriously had positive effects on their behaviors for protecting themselves from COVID-19. Also, the perception that the participants could protect both themselves and others from contracting the virus by taking preventive measures had a

Table 3.
*Cut-off Criteria for Fit Indexes**

Measure	Bad	Acceptable	Excellent
χ^2			
CMIN/DF (χ^2/df)	≥ 5	≥ 3	≥ 1
SRMR	≥ .10	≥ .08	< .08
GFI	≤ .85	≤ .90	> .90
AGFI	≤ .85	≤ .90	> .90
CFI	≤ .90	≤ .95	> .95
RMSEA	≥ .08	≥ .06	< .06

Note: *Recommended cut-off criteria for fit indexes by Hu and Bentler (1999).

Table 4.
Goodness-of-Fit Indices of the CFA Model

Measure	Estimate	Threshold	Interpretation
CMIN (χ^2)	272.634		
df	117		
P	.000		
CMIN/DF (χ^2/df)	2.330	$1 \le \chi^2 / df \le 3$	Excellent
SRMR	.041	$0 < SRMR \le .05$	Excellent
GFI	.937	$.90 \le GFI$	Excellent
AGFI	.909	$.90 \le AGFI$	Excellent
CFI	.959	$.95 \le CFI$	Acceptable
RMSEA	.054	$RMSEA < .06$	Excellent

Note: CFA = confirmatory factor analysis.

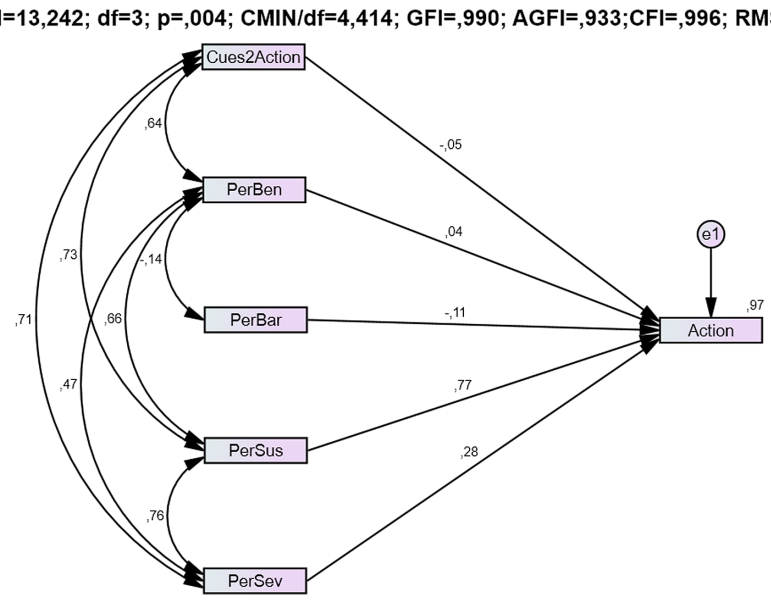


Figure 3.
Path Analysis.

constructive effect on their COVID-19 protection behaviors. The participants' need to leave their homes for various reasons and the requirement of their physical presence at work had a negative effect on behaviors intended to protect against COVID-19. In the research, the cues to action variable, designed as the stimuli required to trigger the process of taking a recommended health action, had a negative effect on participants' behaviors for protecting themselves from COVID-19. The statistically significant and effective items of the cues to action variable were as follows: information shared by health authorities, opinions and practices of people with valued views, informative and reminder advertisements, and interviews with discharged patients.

Conclusion and Recommendations

Telling the target market what to do to protect against COVID-19 is an incomplete and inadequate approach to preventing the spread of the virus. To inform a correct approach, the factors that are effective in facilitating the protective behaviors in question should be determined, and strategies should be developed within this framework. When designing these social marketing strategies, which are frequently used in health behavior interventions, the eight marketing principles, defined as the social marketing mix, should be taken into consideration.

The mainstay of social marketing strategies is the product. A "proposition" created for behavior is called a product in social marketing. In other words, the actions proposed to protect from COVID-19 point to the product in social marketing. In this study, the effects of the perceived susceptibility, perceived severity, perceived barriers, perceived benefits, and cues to action factors on the action were determined using the HBM. In particular, the impact of the perceived susceptibility factor drew attention. Therefore, this factor should be assigned great importance when creating a social marketing intervention.

Different strategies can be applied to affect a proposed behavior with social marketing. With one social marketing strategy, the continuity or adjustment of an intended behavior can occur quickly by focusing on variables that have a high constructive effect on behaviors, while another strategy can concentrate on the variables that have a lower impact on behavior by comparison. By implementing yet another approach, a negative effect can transform into a neutral or positive impact by focusing on variables that have a negative effect on behavior. Based on the framework of the research results, the following alternatives are proposed.

The perceived susceptibility variable had a stronger effect in predicting behaviors intended to protect against COVID-19 than other variables. As such, interventions can be arranged to

Table 5.
Standardized Regression Weights

Predictor	Outcome	Standard Beta
Perceived susceptibility	Action	.768***
Perceived severity	Action	.277***
Perceived benefits	Action	.036**
Perceived barriers	Action	–.109***
Cues to action	Action	–.050***

Note: ***p <.001; **p <.050.

Table 6.
Goodness-of-Fit Indices of the Path Analysis

Measure	Estimate	Threshold	Interpretation
CMIN (χ^2)	13.242		
df	3		
P	.004		
CMIN/DF (χ^2/df)	4.414	$3 \leq \chi^2/df \leq 5$	Acceptable
SRMR	.024	$0 < SRMR \leq .05$	Excellent
GFI	.990	$.90 \leq GFI$	Excellent
AGFI	.933	$.90 \leq AGFI$	Excellent
CFI	.996	$.95 \leq CFI$	Excellent
RMSEA	.087	$.08 \leq RMSEA$	Bad

increase individuals' susceptibility toward this disease with social marketing strategies. Thus, the strong effect of the perceived susceptibility variable can be utilized, and rapid results can be obtained. This alternative can be considered an advantageous method.

The perceived benefit variable was less effective in predicting behaviors toward protection from COVID-19 compared to other variables. Social marketing interventions prepared based on this variable can focus on how the target market can benefit as a result of performing the behavior in question. It is noteworthy to consider that this strategy may take a long time to take effect.

The perceived barriers variable has a negative effect on explaining behaviors for protecting against COVID-19. In social marketing interventions targeting this variable, the target group's perceptions of obstacles can be eliminated, and the desired protection behaviors can be supported. This method may also take a long time to reach success and may not immediately provide the necessary contribution to preventing the spread of the disease.

It is out of the question to demand even an extra minute in a strategy designed to protect from COVID-19, which poses a significant risk to human health and world economies with its high infection rate. In this context, preparing social marketing strategies based on the factors for which effects have already been determined statistically is scientifically more acceptable.

The target market may encounter some difficulties or motivations in exhibiting a desired healthy behavior. These obstacles and motivations are addressed as the "price" in the social marketing mix. In this research, the obstacles encountered in exhibiting the desired healthy behaviors to protect against COVID-19, namely, perceived barriers, and the benefits obtained as a result of exhibiting the behavior in question, or perceived benefits, can be evaluated in this context. In the research model, these two variables were determined to have statistical effects on the action. Social marketing strategies prepared based on these two variables can be designed as follows.

Public and private sector cooperation gains importance in eliminating the perceived obstacles to protection from COVID-19. Leaving their homes for reasons that meet some basic needs of the target market, going to work, and other ventures into public environments constitute an obstacle to the desired healthy behaviors. In this context, public and private partnerships gain significant importance. Working from home can be encouraged in many sectors. In cases where employees need to be physically present at the workplace, standard shift hours, and the number of employees in a location can be reduced. Arrangements for takeaway services can be made, expanded, and encouraged, especially to meet basic food needs.

For daily life to return to normal, goals that can motivate the entire target market should be set. For example, according to the density of the number of cases in a region, province, or district, certain levels (red = intensive number of cases; orange = medium number of cases; green = low number of cases) can be determined. What these levels mean and what actions can help a community move from a more intense to a less intense level can be announced to the target market with informative campaigns. The main message to reach the target market in such campaigns is: "Gaining new behavioral habits is a must for returning to normal life." Thus, people living in an orange zone can be encouraged to act with the same determination and consciousness to reach the green level. With this strategy, the desired result can be achieved quickly. Openness, transparency, and controlled travel are of great importance in the implementation of this system.

By designing activities compatible with the recommended behaviors for protection from COVID-19, the goals of the target market can be fulfilled more efficiently. For example, providing hand sanitizer at the entrance points of workplaces, public transport stations, schools, banks, shopping malls, and other public environments is a harmonious activity already being carried out. These types of harmonious activities that facilitate the display of desired behavior express the "place" mix of social marketing. Images of fear or happiness can be used to encourage and increase the use of hand sanitizer in these public places.

A check-in system can be activated with phone applications for public transport, especially in metropolises with high population density, buses, subways, ferries, and so on. In this way, users can see how many passengers can be on the public transportation vehicle at which time and can check-in at the appropriate time. These and similar activities can ensure that the target market coexists with much fewer people in public places.

For strategies designed to eliminate such a pandemic to be effective and successful, these strategies must be evaluated consistently, sincerely, fairly, and objectively throughout society. Moreover, reliable opinion leaders should communicate their strategies in an easily understandable way through easy-to-access communication channels. In summary, the correct communication strategies to be followed are critical to inform the target market and reduce the spread of the pandemic. Designing and conveying compatible messages encourage the desired health behaviors of the target market to constitute "promotion" among social marketing principles.

Social marketers design their communication strategies at both intra-personal and inter-personal levels. While elements such as personal feelings, attitudes, self, and social cognition are at the forefront in intra-personal strategies, close interpersonal relationships, public, community, group, and other relations come to the fore in the creation of inter-personal strategies. Since the COVID-19 pandemic is an issue that concerns the general public, it may be more appropriate to design communication strategies at the interpersonal level. Society, in general, should act with the same determination and consciousness against a pandemic with such a high basic reproductive rate. The contents of the messages to be prepared should include all segments of society and should be easy to understand. Communication campaigns prepared for this disease, which has been on the global agenda since early 2020, should be kept up-to-date and should keep the market's interest. Not only mass media but also other forums, especially first-level health institutions, should be actively included in information and communication campaigns.

Limitations of the Study

In this study, it was assumed that the individual attitudes, beliefs, and values of the target market were similar and that the social, environmental, and economic factors that may affect the realization of the desired protection behaviors were fixed. It was also assumed that all participants had an equal amount of knowledge about the COVID-19 pandemic. The decision-making process of these behaviors and the factors affecting this process were not considered.

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References

10 Things the EU is doing to fight COVID-19 (2020). *Council of the European Union COVID-19 coronavirus pandemic*. Retrieved from https://www.consilium.europa.eu/en/policies/coronavirus/10-things-against-covid-19/

Agurto, I., Bishop, A., Sánchez, G., Betancourt, Z., & Robles, S. (2004). Perceived barriers and benefits to cervical cancer screening in Latin America. *Preventive Medicine*, 39(1), 91–98. [CrossRef]

Alsulaiman, S., & Rentner, T. (2018). The health belief model and preventive measures: A study of the Ministry of Health campaign on coronavirus in Saudi Arabia. *Journal of International Crisis and Risk Communication Research*, 1(1), 27–56. [CrossRef]

Austin Alchon, S. (2003). *A pest in the land: New World epidemics in a global perspective*. University of New Mexico Press.

Balkhi, F., Nasir, A., Zehra, A., & Riaz, R. (2020). Psychological and behavioral response to the coronavirus (COVID-19) pandemic. *Cureus*, 12(5), e7923. [CrossRef]

Barbosa, J. (2020). COVID-19: Communication materials. Retrieved from https://www.paho.org/en/covid-19-communication-materials

Bauerfeind, R., von Graevenitz, A., Kimmig, P., Schiefer, H. G., Schwarz, T., Slenczka, W., & Zahner, H. (2020). *Zoonoses: Infectious diseases transmissible from animals to humans* (4th ed). ASM Books.

Bavel, J. J. V., Baicker, K., Boggio, P. S., Capraro, V., Cichocka, A., Cikara, M., Crockett, M. J., Crum, A. J., Douglas, K. M., Druckman, J. N., Drury, J., Dube, O., Ellemers, N., Finkel, E. J., Fowler, J. H., Gelfand, M., Han, S., Haslam, S. A., Jetten, J., Kitayama, S., et al. (2020). Using social and behavioural science to support COVID-19 pandemic response. *Nature Human Behaviour*, 4(5), 460–471. [CrossRef]

Carico, R., Sheppard, J., & Thomas, C. B. (2020). Community pharmacists and communication in the time of COVID-19: Applying the health belief model. *Research in Social and Administrative Pharmacy, March*, 1–4. [CrossRef]

Cheng, H., Kotler, P., & Lee, N. R. (Eds.) (2011). *Social marketing for public health: Global trends and success stories*. Jones and Bartlett Publishers.

Chin, J. H., & Mansori, S. (2019). Theory of Planned Behaviour and Health Belief Model: Females' intention on breast cancer screening. *Cogent Psychology*, 6(1). [CrossRef]

Cohen, L., Manion, L., & Morrison, K. (2007). *Research Methods in Education* (6th ed). Routledge. Retrieved from https://www.taylorfrancis.com/books/9780203029053

Craig Lefebvre, R., & Flora, J. A. (1988). Social marketing and public health intervention. *Health Education and Behavior*, 15(3), 299–315. [CrossRef]

Crawshaw, P. (2012). Governing at a distance: Social marketing and the (bio) politics of responsibility. *Social Science and Medicine*, 75(1), 200–207. [CrossRef]

Eser, Z., & Özdoğan, F. B. (2006). *Sosyal Pazarlama - Toplumun Refahı ve kaliteli yaşamı İçin* -. Siyasal Kitabevi.

European Social Marketing Association, & ESMA (2020). Coronavirus disease 2019 (COVID-19) pandemic: A statement from the ESMA. Retrieved from https://europeansocialmarketing.org/2020/03/20/pandemic-a-statement-from-the-esma/

Evers, U., Jones, S. C., Caputi, P. & Iverson, D. C. (2011). Combining the health belief model and social marketing to develop a community-level campaign about asthma for older adults. 10th national emerging researchers in ageing conference: *Abstracts and proceedings*, (pp. 117–125) Australia: Emerging Researchers in Ageing.

Gilfoyle, M., Garcia, J., Chaurasia, A., & Oremus, M. (2019). Perceived susceptibility to developing cancer and mammography screening behaviour: A cross-sectional analysis of Alberta's Tomorrow Project. *Public Health*, 177, 135–142. [CrossRef]

Covid-19 Information Page (2020). *Republic of Turkey Ministry of Health*. Retrieved from https://covid19.saglik.gov.tr/TR-66300/covid-19-nedir-.html

Gözüm, S., & Çapık, C. (2014). Sağlık Davranışlarının Geliştirilmesinde bir rehber: Sağlık İnanç modeli. *Dokuz Eylül Üniversitesi Hemşirelik Yüksekokulu Elektronik Dergisi*, 7(3), 230–237.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. [CrossRef]

Kim, H. S., Ahn, J., & (2012). Applying the health belief model to college students' health behavior. *Nutrition Research and Practice*, 6(6), 551–558. [CrossRef]

Lefebvre, R. C. (2011). Social models for social marketing: Social diffusion, social networks, social capital, social determinants and social franchising. In *The SAGE handbook of social marketing* (pp. 32–43). SAGE Publications Ltd. [CrossRef]

Menegaki, A. N. (2012). A social marketing mix for renewable energy in Europe based on consumer stated preference surveys. *Renewable Energy*, 39(1), 30–39. [CrossRef]

Mouritz, A. (1921). The Project Gutenberg ebook of "The Flu a Brief History of Influenza in U. S. America, Europe, Hawaii." Retrieved from https://www.gutenberg.org/files/61607/61607-h/61607-h.htm

National Consumer Council (2006). *'It's Our Health* (pp. 1–48). Retrieved from http://www.thensmc.com/resource/its-our-health

Orji, R., Vassileva, J., & Mandryk, R. (2012). Towards an effective health interventions design: An extension of the health belief model. *Online Journal of Public Health Informatics*, 4(3). [CrossRef]

Parry, S. (2020). Fit Indices commonly reported for CFA and SEM. *Cornell University: Cornell statistical consulting unit*, 2. Retrieved from www.cscu.cornell.edu/news/handouts.php

Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education Monographs*, 2(4), 328–335. [CrossRef]

Saghafi-Asl, M., Aliasgharzadeh, S., & Asghari-Jafarabadi, M. (2020). Factors influencing weight management behavior among college students: An application of the Health Belief Model. *PLOS ONE*, 15(2), e0228058. [CrossRef]

Sarda, S. R., Tekale, S. U., Kótai, L., Domb, A. J., & Pawar, R. P. (2020). Covid-19: A global pandemic. *European Chemical Bulletin*, 9(8), 266. [CrossRef]

Shahab, A., Lotfizade, M., & Alishan, N. (2013). A new behavioral model (health belief model combined with two fear models): Design, evaluation and path analysis of the role of variables in maintaining behavior. *Diabetes mellitus - Insights and perspectives, May 2014*, 2007–2017. [CrossRef]

Tweneboah-Koduah, E. Y. (2018). Social marketing: Using the health belief model to understand breast cancer protective behaviours among women. *International Journal of Nonprofit and Voluntary Sector Marketing*, 23(2), 1–7. [CrossRef]

World Health Organization (2020). WHO tool for behavioural insights on COVID-19. Retrieved from http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/technical-guidance/who-tool-for-behavioural-insights-on-covid-19

Genişletilmiş Özet

Amaç

Bu çalışmanın amacı COVID19 pandemisine yönelik olarak katılımcıların risk algılarının hastalığın yayılımının önlemesine yönelik davranışlar üzerindeki etkisini Sağlık İnanç Modeli kapsamında tespit ederek Sosyal Pazarlama müdahaleleri için kavramsal bir çerçeve oluşturmaktır.

Yöntem

Anket çalışması planlanırken pandemi koşulları göz önünde bulundurulmuştur. Anket çalışmasının yüz yüze yürütülmesinin hastalığın yayılma riskini artırabileceği düşünülerek Google Forms aracılığıyla anket soruları oluşturulmuştur. Katılımcılara 5–12 Mayıs 2020 tarihleri arasında gönderilen bir link ile ankette yer alan ifadelere cevap vermeleri talep edilmiştir. Bir haftada 459 katılımcıya ulaşan anket 36 ifade ve üç bölümden oluşmaktadır. Birinci bölümde Sağlık İnanç Modeli değişkenlerine ait 26 adet ifadeye yer verilmiştir. Bu ifadeler 10'lu likert tipi ölçeğe göre tasarlanmıştır. İkinci bölümde katılımcıların COVID 19'a yönelik görüşlerinin araştırıldığı altı adet çoktan seçmeli soru bulunmaktadır. Son bölümde ise dört adet demografik soruya yer verilmiştir. Dokuz adet anket kontrol soruları kapsamında elenmiş ve kalan 450 anketin verileri ile istatistiksel analizler yapılmıştır. Yapısal eşitlik analizi için SPSS AMOS 20 kullanılmıştır. SİM'deki değişkenlere ait uyum indeksleri Doğrulayıcı Faktör Analizinden (DFA) ve değişkenler arasındaki ilişkiyi belirlemek için Yol Analizinden yararlanılmıştır.

Bulgular

Bu çalışmada Türkiye Cumhuriyeti vatandaşlarından oluşan hedef kitlenin pandemiden korunmaya yönelik davranışlarda etkili olan faktörlerin tespit edilmesi ve ölçülmesi için Sosyal Pazarlama araştırmalarında sıklıkla yararlanılan SİM kullanılmış ve elektronik ortamda bir anket çalışması yapıldı. Araştırmadaki bazı sorulara verilen cevaplar incelendiğinde; hastalığın kolaylıkla bulaşması nedeniyle sağlık sistemini çökertme gibi bir potansiyelinin olduğu, bu salgından korunmanın en etkin yolunun evde kalmak olduğu, Sağlık Bakanlığı ve Sağlık Bakanlığı bünyesinde oluşturulan Bilim Kurulunun açıklamalarının takip edildiği, bu hastalığın Türk ekonomisine büyük zarar vereceği ve salgının aşı bulunana kadar devam edeceği görüşlerinin katılımcılar arasında hakim olduğu tespit edildi.

Yol analizi sonuçları incelendiğinde; Katılımcıların COVID-19'dan korunmak için hastalık riskini artırıcı faaliyetlerden kaçındıkları, evden çıktıklarında maske ve eldiven kullandıkları ve kalabalık ortamlardan uzak durdukları tespit edildi. Bu davranışların tahmin edilmesinde algılanan duyarlılığın yani "her yaş grubundan insanın bu hastalığa yakalanabileceği ve kalabalık ortamlarda bulunmanın hastalanma riskini artırdığı" algısının yüksek oranda destekleyici etkisinin olduğu görüldü. Bunun yanında katılımcıların "hastalığa yakalanma endişesi, insanlar arasında virüsün hızlı bir şekilde yayılması, kalıcı organ hasarlarına neden olabilme potansiyeli ve hastalığı yüksek seviyede ciddi alması" gibi sahip oldukları algılarının da COVID-19'dan korunma için sergilendikleri davranışların üzerinde pozitif etkilerinin olduğu tespit edildi. Katılımcıların aldıkları önleyici tedbirler ile hastalığın kendilerine ve başkalarına bulaşmasının önüne geçebilecekleri algısının da COVID-19'dan korunma davranışlarının üzerinde yapıcı etkisinin olduğu söylenebilir. Katılımcıların çeşitli nedenlerden dolayı evden ayrılmaları ve iş yerinde fiziki olarak bulanmalarının COVID-19'a yönelik koruyucu davranışlar üzerinde negatif etkisinin olduğu görüldü. Önerilen bir sağlık eyleminin gerçekleşmesi sürecini tetiklemek için gereken uyarıcılar şeklinde tasarlanan Eylem İpuçları değişkenin; bu çalışmada katılımcıların COVID-19'dan korunmalarına yönelik davranışlarına negatif etkisinin olduğu tespit edildi. Bu değişkenin istatistiki olarak anlamlı ve etkili olan ifadeleri; "sağlık otoritelerinin bilgilendirmeleri ve paylaşımları; görüşlerine önem verilen insanların görüşleri ve uygulamaları; bilgilendirici ve hatırlatıcı reklamlar ve taburcu olan hastalarla yapılan röportajlar"dır.